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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application]This invention is excellent in highly humid-proof nature.

It can set right, without damaging wavy hair, the prolonged effect is excellent, and it is related with a hair modification agent constituent useful as a shampoo, hair treatment, etc.

[0002]

[Description of the Prior Art]Permanent waves (henceforth a "permanent wave") are widely performed as a method of correcting and straight-hair-izing wavy hair. A permanent wave by applying the constituent containing reducing agents, such as thioglycolic acid and cystein, to hair, The SS linkage of the quality of hair nature keratin protein is cut under an alkaline condition, and semipermanent modification is performed to hair by making it recombine by subsequently applying oxidizers, such as sodium bromate.

[0003]On the other hand, methods of straight-hair-izing wavy hair temporarily include the method of using the commercial hair care agent for wavy hair, the blowing method by a beautician, etc. The hair care agent for wavy hair is the method of using a slight reducing agent, an oxidizer, etc., and the blowing method is a method of making other hydrogen atom combination forming compulsorily by blow, after cutting the hydrogen atom combination in hair temporarily.

[0004]

[Problem(s) to be Solved by the Invention]However, since the hair setting mechanism in a permanent wave is a thing which makes the SS linkage of the quality of the keratin protein in hair cleave and recombine, embrittlement of the quality of keratin protein of hair will be carried out by this processing. Thus, it becomes easy to damage the hair which carried out embrittlement with physical external force, such as brushing. On the other hand, in order that

the hair care agent for wavy hair may use a slight reducing agent and an oxidizer, sufficient straightening effect is not acquired. The blowing method cannot be performed simple in a home, but, moreover, a set collapses easily under high humidity.

[0005]Then, this invention solves the above-mentioned problem, highly humid-proof nature is excellent, it can change, without damaging wavy hair, and an object of this invention is to provide the hair modification agent constituent which can moreover hold the modification over a long period of time.

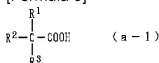
[0006]

[Means for Solving the Problem]When this invention persons make both ingredients permeate hair wholeheartedly with an organic solvent which combines and uses together organic acid and sulfonic acid of specific structure as a result of research, A deformation process (setting ability) of wavy hair is excellent, and it found out that there was no damage to hair which can be set in that case, and also that a transmutation effect is not lost by washing of humidity or a repetition, either also found out, and this invention was completed.

[0007]Namely, one or more sorts as which this invention is chosen from organic acid expressed with general formula (a-1) - (a-4) of (a) following, and its salt, (b) Contain one or more sorts and the (c) organic solvent which are chosen from sulfonic acid expressed with following general formula (b-1) - (b-3), and its salt, and provide a hair modification agent constituent presenting acidity.

[0008]

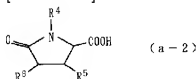
[Formula 9]



[0009][R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> show independently the alkyl group or aryl group of the straight chain of the carbon numbers 4-10, or branched chain which hydroxyl, the alkoxy group, the acyloxy group, the carboxyl group, or the amino group may replace among a formula, respectively.]

[0010]

[Formula 10]

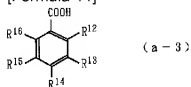


[0011]the inside of [type, and R<sup>4</sup> -- (1) hydrogen atom, (2) carboxyl groups, and (3)-CONR<sup>7</sup>R<sup>8</sup> (R<sup>7</sup> and R<sup>8</sup> here) carbon number which a hydrogen atom or hydroxyl may replace independently, respectively Or the alkyl group of the straight chain of 1-6 or branched chain is

shown, in the arbitrary positions in (4) chains. Carbon number which hydroxyl, the carbonyl group, the amino group, or the alkoxy group may replace The alkyl group of the straight chain of 1-6 or branched chain is shown, and;  $R^5$  and  $R^6$ , respectively -- independent -- (1) hydrogen atom, (2) carboxyl groups, and (3)-CONR<sup>9</sup>R<sup>10</sup> ( $R^9$  and  $R^{10}$  here) Carbon number which a hydrogen atom or hydroxyl may replace independently, respectively . The alkyl group of the straight chain of 1-6 or branched chain is shown. (4) The alkyl group of the straight chain of carbon number 1 which hydroxyl, the carbonyl group, the amino group, or the alkoxy group may replace by the arbitrary positions in a chain - 6, or branched chain, or (5)-OR<sup>11</sup> ( $R^{11}$  here) carbon number which a hydrogen atom or hydroxyl may replace the alkyl group of the straight chain of 1-6, or branched chain -- being shown -- shown]

[0012]

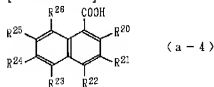
[Formula 11]



[0013] $R^{12}$  -  $R^{16}$  among [type, They are (1) hydrogen atom and (2)-CONR<sup>17</sup>R<sup>18</sup> ( $R^{17}$  and  $R^{18}$  here) independently, respectively. Carbon number which a hydrogen atom or hydroxyl may replace independently, respectively . The alkyl group of the straight chain of 1-6 or branched chain is shown. (3) Carbon number which hydroxyl, the carbonyl group, the amino group, or the alkoxy group may replace by the arbitrary positions in a chain The straight chain of 1-6, or the alkyl group of branched chain, Or] which shows (4)-OR<sup>19</sup> ( $R^{19}$  shows here the alkyl group of the straight chain of carbon number 1 - 6, or branched chain which hydroxyl may replace)

[0014]

[Formula 12]

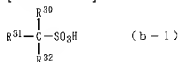


[0015] $R^{20}$  -  $R^{26}$  among [type, respectively -- independent -- (1) hydrogen atom, (2) carboxyl groups, and (3)-CONR<sup>27</sup>R<sup>28</sup> ( $R^{27}$  and  $R^{28}$  here) Carbon number which a hydrogen atom or hydroxyl may replace independently, respectively . The alkyl group of the straight chain of 1-6 or branched chain is shown. (4) Carbon number which hydroxyl, the carbonyl group, the amino group, or the alkoxy group may replace by the arbitrary positions in a chain The straight chain of 1-6, or the alkyl group of branched chain, Or] which shows (5)-OR<sup>29</sup> ( $R^{29}$  shows here the

alkyl group of the straight chain of carbon number 1 - 6, or branched chain which a hydrogen atom or hydroxyl may replace)

[0016]

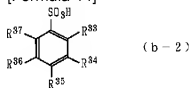
[Formula 13]



[0017][R<sup>30</sup>, R<sup>31</sup>, and R<sup>32</sup> show independently the alkyl group or aryl group of the straight chain of carbon number 1 - 10, or branched chain which hydroxyl, the alkoxy group, the acyloxy group, the carboxyl group, or the amino group may replace among a formula, respectively.]

[0018]

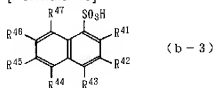
[Formula 14]



[0019]R<sup>33</sup> - R<sup>37</sup> among [type, respectively -- independent -- (1) hydrogen atom, (2)-SO<sub>3</sub>H, and (3)-CONR<sup>38</sup>R<sup>39</sup> (R<sup>38</sup> and R<sup>39</sup> here) Carbon number which a hydrogen atom or hydroxyl may replace independently, respectively . The alkyl group of the straight chain of 1-6 or branched chain is shown. (4) Carbon number which hydroxyl, the amino group, or the alkoxy group may replace by the arbitrary positions in a chain The straight chain of 1-6, or the alkyl group of branched chain, Or] which shows (5)-OR<sup>40</sup> (R<sup>40</sup> shows here the alkyl group of the straight chain of carbon number 1 - 6, or branched chain which a hydrogen atom or hydroxyl may replace)

[0020]

[Formula 15]



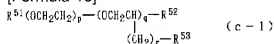
[0021]R<sup>41</sup> - R<sup>47</sup> among [type, respectively -- independent -- (1) hydrogen atom, (2)-SO<sub>3</sub>H and (3) carboxyl group, and (4)-CONR<sup>48</sup>R<sup>49</sup> (independently R<sup>48</sup> and R<sup>49</sup> here, respectively) Carbon number which a hydrogen atom or hydroxyl may replace . The alkyl group of the straight chain of 1-6 or branched chain is shown. (5) Carbon number which hydroxyl, the

carbonyl group, the amino group, or the alkoxy group may replace by the arbitrary positions in a chain The straight chain of 1-6, or the alkyl group of branched chain, Or] which shows (6)-OR<sup>50</sup> (R<sup>50</sup> shows here the alkyl group of the straight chain of carbon number 1 - 6, or branched chain which a hydrogen atom or hydroxyl may replace)

[0022]As for this invention, an organic solvent (c) is the following general formula (c-1).;

[0023]

[Formula 16]



[0024](R<sup>51</sup> shows a hydrogen atom, a methyl group, or a methoxy group among a formula, R<sup>52</sup> and R<sup>53</sup> show a hydrogen atom or hydroxyl, and p, q, and r show the integer of 0-5.) However, are p=q=r=0 and by the case of R<sup>52</sup>=R<sup>53</sup> and p=q=r=0. [ and ] the case where R<sup>51</sup> is [ a hydrogen atom and R<sup>52</sup> ] hydroxyls -- removing -- it is expressed and the content provides the hair modification agent constituent which is 5 to 50 % of the weight in a hair modification agent constituent.

[0025]Although the organic acid (a) used by this invention is expressed with general formula (a-1) - (a-4), As what is expressed with a general formula (a-1) among such organic acid, Caproic acid, hexanoic acid, caprylic acid, heptanoic acid, 2-hydroxyhexanoic acid, 2-hydroxyoctanoic acid, 2-hydroxydecanoic acid, 11-hydroxyundecanoic acid, As what can mention hydroxy pivalate, gluconic acid, pantothenic acid, malic acid, tartaric acid, etc., and is expressed with; general formula (a-2), As what can mention pyrrolidone carboxylic acid etc. and is expressed with; general formula (a-3), As what can mention benzoic acid, o-phthalic acid, meta phthalic acid, para phthalic acid, etc., and is expressed with; general formula (a-4), 1-naphthalene carboxylic acid, 2-naphthalene carboxylic acid, naphthalene dicarboxylic acid, naphthaleneacetic acid, etc. can be mentioned. As a salt of these organic acid, alkali metal salt, alkaline earth metal salt, Ammonium salt, mono-, di-, or tri-C<sub>1</sub>-C<sub>6</sub> alkyl ammonium salt, Mono-, di-, or Tri C<sub>1</sub>-C<sub>6</sub> alkanol ammonium salt etc. are mentioned, as a more desirable salt, as for the mono- \*\*, disodium salt and the mono- \*\* can mention dipotassium salt, and mono- \*\* can mention diammonium salt etc. These organic acid or its salt can be used combining one sort or two sorts or more. In using combining two or more sorts, hexanoic acid, caprylic acid, Two or more sorts of combination chosen from heptanoic acid, hydroxy pivalate, gluconic acid, pantothenic acid, malic acid, tartaric acid, pyrrolidone carboxylic acid, 1-naphthalene carboxylic acid, and 2-naphthalene carboxylic acid are preferred.

[0026]Although sulfonic acid (b) used by this invention is expressed with general formula (b-1) - (b-3), As what is expressed with a general formula (b-1) among such sulfonic acid, 1-

pentanesulfonic acid, 1-hexanesulfonic acid, 1-heptanesulfonic acid, 1-octanesulfonic acid, isethionic acid, 3-hydroxypropanesulfonic acid, 4-hydroxybutanesulfonic acid, 5-hydroxypentanesulfonic acid, As what can mention 6-hydroxyhexanesulfonic acid, 7-hydroxyheptanesulfonic acid, etc., and is expressed with; general formula (b-2), As what can mention benzenesulfonic acid, o-toluenesulfonic acid, m-toluenesulfonic acid, p-toluenesulfonic acid, etc., and is expressed with; general formula (b-3), 1- or 2-naphthalene sulfonic acid, 2,7-naphthalene disulfon acid, 1,5-naphthalene disulfon acid, 2,6-naphthalene disulfon acid, 1,3,6-naphthalene trisulfonic acid, 1-naphthol 2-sulfonic acid, 1-naphthol 4-sulfonic acid, 2-naphthol 6-sulfonic acid, 2-naphthol 7-sulfonic acid, the 1-naphthol 3, 6-disulfonic acid, 2-naphthol 6,8-disulfon acid, 2,3-dihydroxynaphthalene-6-sulfonic acid, 1,7-dihydroxynaphthalene-3-sulfonic acid, 4,5-dihydroxynaphthalene-2,7-disulfon acid, etc. can be mentioned. As a salt of these organic acid, alkali metal salt, alkaline earth metal salt, Ammonium salt, mono-, di-, or Tori  $C_1-C_6$  alkyl ammonium salt, Mono-, di-, or Tori  $C_1-C_6$  alkanol ammonium salt etc. are mentioned, as a more desirable salt, as for the mono- \*\*, disodium salt and the mono- \*\* can mention dipotassium salt, and mono- \*\* can mention diammonium salt etc. These organic acid or its salt can be used combining one sort or two sorts or more. In using combining two or more sorts, 1-hexanesulfonic acid, 1-heptanesulfonic acid, isethionic acid, 3-hydroxypropanesulfonic acid, 4-hydroxybutanesulfonic acid, 5-hydroxypentanesulfonic acid, 6-hydroxyhexanesulfonic acid, 6-hydroxyhexanesulfonic acid, Benzenesulfonic acid, p-toluenesulfonic acid, 1,5-naphthalene disulfon acid, Two or more sorts of combination chosen from 2,6-naphthalene disulfon acid, 1,3,6-naphthalene trisulfonic acid, 1-naphthol 2-sulfonic acid, 1-naphthol 4-sulfonic acid, 2-naphthol 6-sulfonic acid, and 2-naphthol 7-sulfonic acid are preferred.

[0027]Although an optical isomer exists in the above-mentioned organic acid and sulfonic acid by existence of an asymmetric carbon atom, in this invention, it is usable in both an optically active substance and racemate.

[0028]Loadings of organic acid or its salt (a) and sulfonic acid, or its salt (b), Since 0.1 % of the weight or more is preferred as for all and they can perform modification of high hair of a prolonged effect into a hair modification agent constituent, without [ especially / 1 % of the weight or more and also ] highly humid-proof nature's improving and doing damage to wavy hair, if it blends 1.0 to 20% of the weight, it is desirable. Although a compounding ratio in particular of organic acid, its salt (a) and sulfonic acid, or its salt (b) is not restricted, 10:1-1:10 are preferred at a weight ratio.

[0029]The organic solvent (c) used by this invention can mention what will not be restricted especially if organic acid or its salt (a) and sulfonic acid, or its salt (b) can be made to permeate hair, for example, is expressed with a general formula (c-1). As such an organic solvent (c), ethanol, isopropanol, 1-propanol, 1,3-butanediol, hexylene glycol, etc. can be

mentioned, and these can be used combining one sort or two sorts or more. When using combining two or more sorts, combination of ethanol and 1-propanol is preferred.

[0030]In a hair modification agent constituent, 5 to 50 % of the weight is preferred, and loadings of an organic solvent (c) have good osmosis to hair of organic acid or its salt (a) and sulfonic acid, or its salt (b), and since 10 to 40 % of the weight and also 20 to 30 % of the weight can fully reveal those effects, it is especially preferred [ loadings ].

[0031]In addition to the above-mentioned ingredient, a combination ingredient of publicly known hair cosmetics can be blended with a hair modification agent constituent of this invention. As such an ingredient, a surface-active agent, for example, alkylbenzene sulfonates, Alkyl ether sulfate, olefin sulfonate, alpha-sulfo fatty acid ester, Anionic surface-active agents, such as an amino acid system surface-active agent, a phosphoric ester system surface-active agent, and a SUHORU succinate system surface-active agent; A sulfonic acid type surface-active agent, Ampholytic surface active agents, such as a betaine type surface-active agent, alkylamine oxide, and an imidazoline type surface-active agent; Polyoxyethylene alkyl ether, Polyoxyethylene alkyl phenyl ether, alkanol amide, and its alkylene oxide addition, Ester species of polyhydric alcohol and fatty acid, sorbitan fatty acid ester species, Nonionic surfactants, such as an alkyl saccharide system surface-active agent; Mono- \*\* JI straight chain long chain alkyl quarternary ammonium salt, The mono- \*\* can mention cationic surface-active agents, such as JI branch-type straight chain long chain alkyl quarternary ammonium salt, and these can be used combining one sort or two sorts or more. Also in these, when a constituent of this invention is a shampoo, It is preferred to use in consideration of stimulateness over the skin or hair combining an amino acid system surface-active agent, a phosphoric ester system surface-active agent, a SUHORU succinate system surface-active agent, an imidazoline type surface-active agent, and an alkyl saccharide system surface-active agent.

[0032]As for loadings of these surface-active agents, in a hair modification agent constituent, 0.01 to 40.0 % of the weight is preferred, and its 0.5 to 20.0 % of the weight is especially preferred to it.

[0033]Cationic polymer can be blended in order to raise a feel of hair or the skin. As this cationic polymer, a cation-ized cellulosic, cation-ized starch, A cation-ized Cyamoposis Gum derivative, diaryl quarternary ammonium salt / acrylamide non-mixture, the 4th class-ized polyvinyl-pyrrolidone derivative, polyglycol / polyamine condensate, etc. can be mentioned, and these can be used combining one sort or two sorts or more. As a more concrete example of these cationic polymer, Cation-ized cellulose of the molecular weight about 100,000-3,000,000, Cation-ized starch of the degree about 0.01-1 of cation-izing, cation-ized guar gum of the degree about 0.01-1 of cation-izing (made in May Hall: JAGUA etc.), The diaryl quarternary ammonium salt / acrylamide copolymer of the molecular weights 30,000-

2,000,000, The 4th class-ized polyvinyl-pyrrolidone derivatives, such as a polyvinyl pyrrolidone / the 4th class of dimethylaminoethyl methacrylate copolymer whose cationic nitrogen content of the vinyl polymerization inside of the body is 1.8 to 2.4% in the molecular weights 10,000-2,000,000, A polyglycol polyamine condensate which has an alkyl group of the carbon numbers 6-20, Adipic acid / dimethylamino hydroxypropyl diethylenetriamine copolymer (made in Sun Dos: cards RECHIN etc.). Cationic polymer of a statement can be mentioned [ an 18 line - 33 pages of 14th page of JP,53-139734,A left upper column left lower column of two lines, and 17-10 pages of 8th page of JP,60-36407,A right upper column right upper column / of six lines ].

[0034]As for loadings of cationic polymer, in a hair modification agent constituent, 0.05 to 20.0 % of the weight is preferred, and its 0.1 to 10.0 % of the weight is especially preferred to it.

[0035]A silicone derivative can be blended in order to raise a feel of hair or the skin. As this silicone derivative, dimethylpolysiloxane, a methylphenyl polysiloxane, Amino modifying silicone, denaturing alcohol silicone, fatty alcohol denaturation silicone, Silicone derivatives, such as polyether denaturation silicone, epoxy denaturation silicone, fluoride denaturation silicone, cyclic silicone, and alkyl modification silicone, can be mentioned, and these can be used combining one sort or two sorts or more. These silicone derivatives can also be used as a latex composition by which the emulsion polymerization was carried out to JP,56-38609,B (the ten-line - 2 pages of 1st page lower right column left upper column of 11 lines) by a method of a statement. Since with a degree of polymerization [ of 500 or more ] dimethylpolysiloxane, polyether denaturation silicone, amino modifying silicone, and cyclic silicone can give a good feel to hair also in these silicone derivatives, it is desirable.

[0036]as for loadings of a silicone derivative, in a hair modification agent constituent, 0.01 to 20.0 % of the weight is preferred -- especially -- 0.05 to 10.0 % of the weight -- good -- better.

[0037]An ingredient of others which are usually blended with a hair modification agent constituent of this invention at hair cosmetics, For example, higher fatty acid salt of a long chain [ lauric acid ], alkylamine oxide, Fatty acid alkanolamide, squalane, lanolin, alpha-mono-isostearyl glyceryl ether, feel improvers [ , such as cholesteryl sulfate, ]; -- moisturizer [ , such as urea, ]; -- methyl cellulose. viscosity controlling agent; pearl-ized agents, such as a carboxyvinyl polymer, hydroxyethyl cellulose, and polyoxyethylene glycol distearate, --; perfume; coloring matter; ultraviolet ray absorbent; antioxidant; triclosan. Germicides, such as trichlorocarbane; Anti-inflammatory agent; zinc pilus thione, such as potassium glycyrrhizate and tocopherol acetate, Anti-dandruff agents, such as octopirox; amino-polycarboxylic-acid derivatives, such as ethylenediaminetetraacetic acid as antiseptic; chelating agents, such as methylparaben and butylparaben, etc. can be blended within limits which do not spoil the purpose of this invention.

[0038]A pharmaceutical form in particular of a hair modification agent constituent of this



invention is not restricted, and Solution, It can be made a pharmaceutical form of a request of an ethanol solution, an emulsion, a suspension, gel, a liquid crystal, aerosol, etc., and can apply as a shampoo, rinse, hair treatment, a conditioner, a blow agent, a form agent, a lotion, hair cream, etc.

[0039]As for a hair modification agent constituent of this invention, it is preferred to present acidity and to adjust pH for pH to 2.5-6 two to less than seven especially preferably with acid or alkali (pH adjuster). When a hair modification agent constituent of this invention is in neutrality or an alkaline region, a transmutation effect of wavy hair, highly humid-proof nature, and a prolonged effect of modification fall.

[0040]

[Effect of the Invention]The hair modification agent constituent of this invention is excellent in the straightening effect of wavy hair, and does not damage hair in that case. When the once corrected wavy hair is neglected in a high humidity atmosphere, and also when a shampoo is carried out, the reform state is not spoiled at all, and the hair modification agent constituent of this invention also has the outstanding highly humid-proof nature and prolonged effect.

[0041]

[Example]Hereafter, this invention is not limited by these although an example explains this invention in more detail.

[0042]The hair modification agent constituent of the presentation shown in the one to Examples 1-11 and comparative example 5 table 1 was manufactured in accordance with the conventional method, and the following performance evaluation test was done about them. In accordance with a result, it is shown in Table 1.

[0043](The degree of reform of wavy hair) 20 wavy hair (15 cm) of the Japanese woman who has not done cold wave until now was tied up into a knot, the class product was applied to this hair, and it warmed at 40 °C for 1 hour. Then, it is a stream, and rinsed and the following standard estimated the degree of reform of the kink after desiccation.

O : excel dramatically.

O : excel.

\*\* : It can be called neither.

x : It is inferior.

[0044](Highly humid-proof nature) The hair bunch which carried out the same processing as the degree of reform of a kink was moved to the case whose humidity was controlled to 90% of relative humidity, and was neglected for 1 hour. Then, it took out from the case, the degree of reform of the kink was measured, and the following standard estimated highly humid-proof nature (grade of change at the time of comparing with the hair state before putting into a case).

O : excel dramatically.

O : excel.

\*\* : It can be called neither.

x : It is inferior.

[0045](Washability) About the hair bunch which carried out the same processing as the degree of reform of a kink, after the commercial shampoo washed, the degree of reform of the kink at the time of air-drying was measured, and washability (grade of change at the time of comparing with the hair state before a shampoo) was evaluated.

O : excel dramatically.

O : excel.

\*\* : It can be called neither.

x : It is inferior.

[0046]

[Table 1]

製品 組成、性能	実 施 例											比 較 例				
	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5
(a) 群 安息香酸	0.1	0.1	1.0	1.0	1.0	5.0	5.0	10	10	5.0	5.0	5.0	—	5.0	5.0	5.0
(b) 群 ベンゼンスルホン酸	0.1	10	0.1	5.0	10	1.0	5.0	0.1	10	5.0	5.0	—	5.0	5.0	5.0	5.0
(c) エタノール	20	20	20	20	20	20	20	20	20	40	20	20	20	—	0.5	20
水	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス	バラン ス
計	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
固形物(トリウム溶液)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	7.0	3.5	3.5	3.5	3.5	7.5
くせの矯正度	○	○	◎	◎	◎	◎	◎	◎	◎	◎	○	×	×	×	×	△
耐 高 湿 性	○	○	○	◎	◎	◎	◎	◎	◎	◎	○	×	×	×	×	△
耐 洗 浄 性	○	○	○	◎	◎	◎	◎	◎	◎	◎	○	×	×	×	×	△

[0047]As for Examples 1-11, wavy hair is corrected as shown in Table 1.

It was held as it was, even when [ which was neglected in highly humid atmosphere ] it case and washed.

On the other hand, the comparative examples 1-3 which do not contain either benzoic acid, benzenesulfonic acid or an organic solvent returned to the state before reform easily, when [ which also neglected the part which wavy hair was hardly corrected but was corrected slightly in highly humid atmosphere ] it case and washed. Although benzoic acid and benzenesulfonic acid were contained, although it was good to have compared with the comparative examples

1-3 as for the comparative example 5 whose comparative example 4 and pH with less content of an organic solvent than the lower limit of a desirable quantity of the invention in this application are not acidic regions, it was inferior compared with Examples 1-11.

[0048] Ethanol was blended with the combination of the organic acid and sulfonic acid which are shown in the six to Examples 12-67 and comparative example 26 table 2, and the hair modification agent constituent of this invention was obtained. As for each loadings of organic acid and sulfonic acid, 20 % of the weight and the remainder of the loadings of 5.0 % of the weight and ethanol are water, and sodium hydroxide solution adjusted pH to 3.0. About each of these hair modification agent constituents, the same examination as Example 1 was done, and the overall evaluation was carried out by the following valuation basis. A result is shown in Table 2. The evaluation result about the comparative examples 6-26 using acetic acid, glucohol acid, or 2-hydroxybutyric acid as organic acid is also shown in Table 2.

O : excel dramatically.

O : excel.

\*\* : It can be called neither.

x : It is inferior.

[0049]

[Table 2]

		成分 (b) スルホン酸	1-ヘキサンスルホン酸	1-ヘプタンスルホン酸	6-ヒドロキシヘキサンスルホン酸	D-トルエンスルホン酸	1-ナフタレンスルホン酸	2,7-ナフタレンジスルホン酸
		成分 (a) カルボン酸						
実施例	12~18	ヘキサノ酸	○	○	○	◎	◎	◎
	19~25	ヘプタン酸	○	○	○	◎	◎	◎
	26~32	2-ヒドロキシヘキサノ酸	○	○	○	◎	◎	◎
	33~39	安息香酸	◎	◎	○	◎	◎	◎
	40~46	サルチル酸	◎	◎	○	◎	◎	◎
	47~53	ナフタレンカルボン酸	○	○	○	◎	◎	◎
	54~60	ナフタレンジカルボン酸	○	○	○	◎	◎	◎
	61~67	ピロリドンカルボン酸	○	○	○	◎	◎	◎
比較例	6~12	酢酸	×	×	×	×	×	×
	13~18	グリコール酸	×	×	×	×	×	×
	20~26	2-ヒドロキシ酪酸	×	×	×	△	△	△

[0050]As for Examples 12-67, wavy hair is corrected.

It was held as it was, even when [ which was neglected in highly humid atmosphere ] it case and washed.

[0051]Example 68 (shampoo composition)

The shampoo composition of the following presentation was manufactured with the conventional method.

[Table 3]

(Presentation) (% of the weight)

polyoxyethylene (EO=2.5) 15.0. lauryl ether sulfate sodium salt palm-oil-fatty-acid diethanolamide 3.0 pyrrolidone carboxylic acid 6.01-naphthalene sulfonic acid 3.5 ethanol 20.0 cationic cellulose (molecular weight 200,000 [ about ]). 0.5 amino-modifying silicone 0.5 (SM 8702C; made by a TORE silicone company)  
 perfume 0.2 coloring matter Minute amount sodium hydroxide (pH adjuster) Optimum dose  
 purified water Balance meter 100.0 -- this shampoo was excellent in the straightening effect of the wavy hair by repeated use.

[0052]Example 69 (hair treatment composition)

The hair treatment composition of the following presentation was manufactured with the conventional method.

[Table 4]

(Presentation) (% of the weight)

JI (2-hexadecyl) dimethylammonium chloride 2.0 Sept Iles trimethylammonium chloride 2.5 lauryl trimethylammonium chloride 2.0 chloridation (myristoyl aminoethyl N-hydroxyethyl) amino-2-hydroxypropyl trimethylammonium . 1.0 pyrrolidone-carboxylic-acid 2.02,7-dinaphthalenesulfonic acid. 2.5 ethanol 15.0 stearic acid 5.0 polyoxyethylene (EO=5) oleylether 0.4 dimethylpolysiloxane (degree of polymerization 1000). 0.5 pentaerythritol glyceryl isostearyl glycidyl. 1-mol adduct of ether 0.1 benzyloxy ethanol 0.3 diethylene glycol monoethyl ether 5.0 hydroxyethyl cellulose (1% solution; viscosity 8000cp). 0.3 methylparaben. 0.2 perfume 0.2 sodium hydroxide (pH adjuster) Optimum dose purified water Balance meter 100.0 -- this hair treatment composition is excellent in the straightening effect of wavy hair.

Smooth nature and pliability could be given to hair, and also there were also few oily feelings, and it was able to be made the hair of the feel carried out gently.

[0053]Instead of the ethanol of example 70 Example 9, an equivalent amount of isopropanol, 1-propanol, 1,3-butanediol, or hexylene glycols were used, and also the hair treatment composition was obtained like Example 9. This hair treatment composition is excellent in the straightening effect of wavy hair.

Smooth nature and pliability could be given to hair, and also there were also few oily feelings, and it was able to be made the hair of the feel carried out gently.

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[Translation done.]